

34 (New) A method for producing thermonuclear fusion, comprising the steps of:
providing a working liquid enriched with isotopic D or T atoms comprising molecules;

placing at least a portion of said liquid into a tension state, a maximum tension in said tension state being below the cavitation threshold of said liquid, said tension state imparting stored mechanical energy into said liquid portion;

directing nucleating agents comprising at least one of: neutrons, photons, alpha particles and fission products, at said liquid portion when said liquid portion is in said tension state, said nucleating agents having sufficient energy for nucleating a plurality of bubbles substantially filled with vapor from said liquid, said bubbles substantially filled with vapor, having an as nucleated bubble radius greater than a critical bubble radius of said liquid;

growing said bubbles substantially filled with vapor, and imploding said bubbles substantially filled with vapor, wherein a resulting temperature obtained from energy released from said implosion is sufficient to induce a thermonuclear fusion reaction of said isotopic D or T atom comprising molecules in said liquid portion.

35. (New) The method of claim 34, wherein said thermonuclear fusion reaction is one or both of a D-D and a D-T reaction.

36. (New) The method of claim 34, further comprising the step of cooling said liquid to a temperature below an ambient temperature.

37. (New) The method of claim 34, wherein said tension state is a part of a time-varying pressure state including compressive and tensile portions.

38.(New) The method of claim 34, wherein said tension state is a constant tension state.

39.(New) The method of claim 34, wherein an acoustical wave source is used for said tensioning.

40. (New) The method of claim 39, further comprising the step of focusing acoustical waves provided by said acoustical wave source.

41. (Original) The method of claim 34, wherein said as nucleated bubble radius is from 10 to 100 nm.

42. (New) the method of claim 34, wherein a neutron source is used for said nucleating, further comprising the step of synchronizing neutron impact with a location in said liquid having a predetermined liquid tension level.

43. (New) the method of claim 34, wherein said liquid is a high accommodation coefficient liquid.

44. (New) The method of claim 34, wherein said fundamental particles are selected from the group consisting of alpha particles, neutrons and fission fragments.

45. (New) the method of claim 34, wherein said growing and imploding occurs responsive to an applied acoustical field.

46. (New) The method of claim 34 , wherein said liquid is an organic liquid.

47. (New) An apparatus for producing thermonuclear fusion, comprising:

- a chamber containing a high accommodation liquid;

- a means for inducing tension in said high accommodation liquid;

- a nucleating agent comprising at least one of: neutrons, alpha particles, photons and fission products;

- a means for enhancing the size of the nucleated bubbles in tension to a volume greater than a predetermined volume before inducing controlled implosion;

thereby producing thermonuclear fusion.